



IPW

Practitioner's Docket No. 2550/167

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Hagh et al.

Application No.: 10/625.485 ✓

Filed: July 23, 2003

For: Reduced Complexity Turbo Decoding Scheme

Group No.: 2133

Examiner: Not yet assigned

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT
WITHIN THREE MONTHS OF FILING OR
BEFORE MAILING OF FIRST OFFICE ACTION (37 C.F.R. SECTION 1.97(b))

NOTE: "An information disclosure statement shall be considered by the Office if filed by the applicant: (1) within three months of the filing date of a national application; (2) within three months of the date of entry of the national stage as set forth in section 1.491 in an international application; or (3) before the mailing date of a first Office action on the merits, whichever event occurs last." 37 C.F.R. section 1.97(b).

NOTE: The "filing date of a national application" under 37 C.F.R. section 1.97(b) has two possible meanings. Where the filing is a direct one to the United States Patent & Trademark office, the filing is defined in 37 C.F.R. section 1.53(b) as "the date on which: (1) A specification containing a description pursuant to section 1.71 and at least one claim

CERTIFICATE OF MAILING/TRANSMISSION (37 C.F.R. SECTION 1.8(a))

I hereby certify that, on the date shown below, this correspondence is being:

MAILING

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Date: July 27, 2004

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☐ transmitted by facsimile to the Patent and Trademark Office.

Signature

Jeffrey T. Klayman

pursuant to section 1.75; and (2) any drawing required by section 1.81(a), are filed in the Patent and Trademark Office in the name of the actual inventor or inventors as required by section 1.41." 37 C.F.R. section 1.97(b)(1). On the other hand, an international application that enters the national stage occurs when the applicant has filed the documents and fees required by 35 U.S.C. section 371(c) within the periods set forth in section 1.494 or section 1.495. 35 U.S.C. section 371(c) requires the filing of the following: (1) the basic national fee; (2) a copy of the international application, unless already sent by the International Bureau, and optionally an English translation if filed in another language; and, also optionally (3) amendments under PCT Article 19, with a translation into English if made in another language; (4) an oath or declaration; and (5) a translation into English of any annexes to the international preliminary examination report, if such annexes were made in another language. The optional items must be submitted later, with surcharges. 37 C.F.R. section 1.97(b)(2).

IDENTIFICATION OF TIME OF FILING THE ACCOMPANYING INFORMATION DISCLOSURE STATEMENT

The information disclosure statement submitted herewith is being filed within three months of the filing date of the application or date of entry into the national stage of an international application or before the mailing date of a first Office action on the merits, whichever event occurs last. 37 C.F.R. section 1.97(b).

NOTE: "No certification or fee is due when the filing is made within the above time period. It is advisable to ensure that no Office action has been mailed if the disclosure statement is delayed until after three months from filing."

NOTE: "An information disclosure statement will be considered to have been filed on the day it was received in the Office, or on an earlier date of a mailing if accompanied by a properly executed certificate of mailing under 37 C.F.R. 1.8, or Express Mail certificate under 37 C.F.R. 1.10. An office action is mailed on the date indicated in the Office action." Notice of April 20, 1992 (1138 O.G. 37-41, 39).

NOTE: "The term 'national application' includes continuing applications (continuations, divisions, continuations-in-part) so three-months will be measured from the actual filing date of an application as opposed [sic] to the effective date of a continuing application." Notice of April 20, 1992 (1138 O.G. 37-41, 39).

NOTE: "An action on the merits means an action which treats the patentability of the claims in an application, as opposed to only formal or procedural requirements. An action on the merits would, for example, contain a rejection or indication of allowability of a claim or claims rather than just a restriction requirement (37 C.F.R. section 1.142) or just a requirement for additional fees to have a claim considered (37 C.F.R. section 1.16(d)). Thus, if an application was filed on Jan. 1 and the first Office action on the merits was not mailed until six months later on July 1, the examiner would be required to consider any proper information disclosure statement filed prior to July 1." Notice of April 20, 1992 (1138 O.G. 37-41, 39).

WARNING: "A petition for suspension of action to allow applicant time to submit an information disclosure statement will be denied as failing to present good and sufficient reasons, since 37 C.F.R. section 1.97 provides adequate recourse for the timely submission of prior art for consideration by the examiner." Notice of July 6, 1992 (1141 O.G. 63).


SIGNATURE OF PRACTITIONER

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Practitioner's Docket No. 2550/167 **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Hagh et al.

Application No.: 10/625.485

Group No.: 2133

Filed: July 23, 2003

Examiner: Not yet assigned

For: Reduced Complexity Turbo Decoding Scheme

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

NOTE: "An information disclosure statement shall be considered by the Office if filed by the applicant:

(1) Within three months of the filing date of a national application;

(2) Within three months of the date of entry of the national stage as set forth in section 1.491 in an international application; or

CERTIFICATION UNDER 37 C.F.R. SECTIONS 1.8(a) and 1.10*

*(When using Express Mail, the Express Mail label number is mandatory;
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37 C.F.R. SECTION 1.8(a)

37 C.F.R. SECTION 1.10*

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Date: July 27, 2004

Jeffrey T. Klayman

***WARNING:** Each paper or fee filed by "Express Mail" must have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. section 1.10(b).
"Since the filing of correspondence under section 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable C.F.R.e, requests for waiver of this requirement will not be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(3) Before the mailing date of a first Office action on the merits, whichever event occurs last." 37 C.F.R. section 1.97(b).

NOTE: "Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section." 37 C.F.R. section 1.56(a).

"Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

- (1) each inventor named in the application;
- (2) each attorney or agent who prepares or prosecutes the application; and
- (3) every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application." 37 C.F.R. section 1.56(c).

NOTE: The "duty as described in section 1.56 will be met so long as the information in question was cited by the Office or submitted to the Office in the manner prescribed by sections 1.97(b) - (d) and 1.98 before issuance of the patent." Notice of January 9, 1992, 1135 O.G. 13-25 at 17.

WARNING: "No information disclosure statement may be filed in a provisional application." 37 C.F.R. section 1.51(b).

List of Sections Forming Part of This Information Disclosure Statement

The following sections are being submitted for this Information Disclosure Statement:

(check sections forming a part of this statement: disC.F.R.d unused sections and number pages consecutively)

1. ☒ Preliminary Statements
2. ☒ Forms PTO/SB/08A and 08B (substitute for Form PTO-1449)
3. ☐ Statement as to Information Not Found in Patents or Publications
4. ☐ Identification of Prior Application in Which Listed Information Was Already Cited and for Which No Copies Are Submitted or Need Be Submitted
5. ☐ Cumulative Patents or Publications
6. ☐ Copies of Listed Information Items Accompanying This Statement
7. ☒ Concise Explanation of Non-English Language Listed Information Items
 - 7A. ☐ EPO Search Report
 - 7B. ☐ English Language Version of EPO Search Report
8. ☐ Translation(s) of Non-English Language Documents
9. ☐ Concise Explanation of English Language Listed Information Items (Optional)
10. ☒ Identification of Person(s) Making This Information Disclosure Statement

(complete the following, if appropriate)

Sections _____, respectively, have been continued on ADDED PAGE(S).

NOTE : "Once the minimum requirements are met, the examiner has an obligation to consider the information." Notice of April 20, 1992 (1138 O.G. 37-41, 37).

Section 1. Preliminary statements

Applicants submit herewith patents, publications or other information, of which they are aware that they believe may be material to the examination of this application, and in respect of which, there may be a duty to disclose.

The filing of this information disclosure statement shall not be construed as a representation that a search has been made (37 C.F.R. section 1.97(g)), an admission that the information cited is, or is considered to be, material to patentability, or that no other material information exists.

The filing of this information disclosure statement shall not be construed as an admission against interest in any manner. Notice of January 9, 1992, 1135 O.G. 13-25, at 25.



SECTION 2. FORMS PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Hagh et al. Attorney Docket: 2550/167
 Serial No: 10/265,485 Art Group Unit: 2133
 Date Filed: July 23, 2003 Examiner Name: Not yet assigned
 Invention: Reduced Complexity Turbo Decoding Scheme

**LIST OF PATENTS AND PUBLICATIONS FOR
 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

| U.S. PATENT DOCUMENTS | | | | | |
|-----------------------|------------------|-----------------|------------|------------------|----------------|
| Examiner Initials | Reference Number | Document Number | Issue Date | Inventor | Class/Subclass |
| | AA | US 5,761,248 | 06/02/1998 | Hagenauer et al. | 375/340 |
| | AB | US 5,734,962 | 03/31/1998 | Hladik et al. | 371/137.4 |
| | AC | US 5,729,560 | 05/17/1998 | Hagenauer et al. | 371/43.1 |
| | AD | US 5,721,746 | 02/24/1998 | Hladik et al. | 371/43 |
| | AE | US 5,721,745 | 02/24/1998 | Hladik et al. | 371/43 |
| | AF | US 5,563,897 | 10/08/1996 | Pyndiah et al. | 371/37.4 |
| | AG | US 5,537,444 | 07/16/1996 | Nill et al. | 375/341 |
| | AH | US 5,181,209 | 01/19/1993 | Hagenauer et al. | 371/43 |
| | AI | US 5,406,570 | 04/11/1995 | Berrou et al. | 371/43 |
| | AJ | US 5,446,747 | 08/29/1995 | Berrou | 371/45 |

| OTHER DOCUMENTS | | | |
|-------------------|------------------|--|--|
| Examiner Initials | Reference Number | Author | Title of Article, Title of Journal, Volume Number, Page Numbers, Date |
| | AK | M. Hagh | "Design of Turbo Coded Modulation for Bandwidth Limited Channels," M.S. thesis, University of Tehran, March 1999 |
| | AL | | 3G TS 25.212 V3.1.0 (1999-21) http://www.3gpp.org ; 3 rd Generation Partnership Project: Technical Specification Group Radio Access Network; Multiplexing and channel coding (FDD), 12/12/1999 |
| | AM | C. Berrou, A. Glavieux, and P. Thitimajshima | "Near Shannon Limited Error-Correcting Coding and Decoding Turbo-Codes (1)," in Proc. ICC' 93, May 1993, Geneva, Switzerland, pp. 1064-1070 |

| | | | |
|--|----|--|--|
| | AN | L.F. Choy, I.J. Fair, W.A. Krzymien | "Complexity-Performance Trade-offs in Turbo Codes for IMT-2000," in Proc. 2000 IEEE Vehicular Technology Conference, Boston, MA, USA, pp 4.6.2.4 |
| | AO | D. Divsalar and F. Pollara | "Multiple Turbo Codes for Deep-Space Communications," <i>The JPL TDA Progress Report</i> 42-121, Jan-March 1995, May 15, 1995 |
| | AP | S. Benedetto, D. Divsalar, G. Montorsi, F. Pollara | "A Soft-Input Soft-Output APP Module for Iterative Decoding of Concatenated Codes," IEEE Communication Letters, Jan. 1997 |
| | AQ | F. Khaleghi, A. Khandani, N. Secord, A. Gutierrez | "On Symbol-based Turbo Codes for cdma2000," Wireless Communications and Networking Conference, 1999. WCNC. 1999 IEEE, vol. 1, 1999 pp 471-745 |
| | AR | H. Michel, A. Worm, N. Wehn | "Influence of Quantization on the Bit-Error Performance of Turbo-Decoders," In Proc. 2000 IEEE Vehicular Technology Conference, Tokyo, Japan, pp 581-585 |
| | AS | Dr. Jason P. Woodard | "Implementation of High Rate Turbo Decoders for Third Generation Mobile Communications," IEEE Colloquium on Turbo Codes in Digital Broadcasting, 1999, pp 12.1-12.6 |
| | AT | A. Worm, P. Hoeher, N. Wehn | "Turbo-Decoding Without SNR Estimation," IEEE Communication Letter, Vol. 4, No. 6, June 2000 |
| | AU | A.J. Richardson | "Performance of WCDMA Turbo Code Decoders-Part 1," Imagicom Technical Report TR01-001, Sept. 20, 1999 |
| | AV | M. Marandian, J. Fridman, Z. Zvonar, M. Salehi | "Performance Analysis of Sliding Window Turbo Decoding Algorithms for 3GPP FDD Mode," International Journal of Wireless Information Networks, Vol. 9, No. 1, Jan. 2002 |
| | AW | P. Robertson | "Improving Decoder and Code Structure of Parallel Concatenated Recursive Systematic (Turbo) Codes," IEEE, Sessions 1.8 & 1.9, April 1994 |
| | AX | | 3G TS 25.212 V3.2.0 (2000-03) http://www.3gpp.org ; 3 rd Generation Partnership Project: Technical Specification Group Radio Access Network; Multiplexing and channel coding (FDD), (Release 1999) |

Examiner Signature: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation *if not* in conformance and not considered. Include copy of this form with next communication to applicant.

Section 6. Copies of Listed Information Items Accompanying This Statement

NOTE: 37 C.F.R. section 1.98(a)(2) requires that any information disclosure statement filed under section 1.97 shall include: "A legible copy of: (1) Each U.S. and foreign patent; (ii) Each publication or that portion which caused it to be listed; and (iii) All other information or that portion which caused it to be listed, except that no copy of a U.S. patent application need be included . . ."

NOTE: The wording in section 1.98(a)(2)(iii) makes it clear that the requirement to submit a copy of each item of information listed in an information disclosure statement does not apply to the citation of a U.S. patent application. Notice of January 9, 1992, 1135 O.G. 13-25, at 14.

Legible copies of all items listed in Forms PTO/SB/08A and 08B (substitute for Form PTO-1449) accompany this information statement.

(complete the following, if applicable)

☒ Exception(s) to above:

☐ Items in prior application, from which an earlier filing date is claimed for this application, as identified in Section 4.

☐ Cumulative patents or publications identified in Section 5.

U.S. patent citations are not included pursuant to 37 CFR 1.98 9(a)(2)(i) and 37 CFR 1.491(b), in which the USPTO waived the requirement for submitting a copy of each cited U.S. patent and each U.S. patent application publication for all U.S. national patent applications filed after June 30, 2003 and for all international applications that have entered the national stage under 35 USC § 371 after June 30, 2003.

Section 7. Concise Explanation of Non-English Language List Information Items

NOTE: "A concise explanation of the relevance, as it is presently understood by the individual designated in section 1.56(c) most knowledgeable about the content of the information of each patent, publication, or other information listed that is not in the English language shall be included in any information disclosure statement filed under section 1.97. The concise explanation may be either separate from the specification or incorporated therein." 37 C.F.R. section 1.98(a)(3).

NOTE: "[T]he explanation required is limited to the relevance as understood by the individual designated in section 1.56(c) most knowledgeable about the content of the information at the time the information is submitted to the Office." Notice of January 9, 1992, 1135 O.G. 13-25 at 14.

NOTE: "Where the information listed is not in the English language, but was cited in a search report by a foreign patent officer, the requirement for a concise explanation of relevance is satisfied by submitting an English language version of the search report." Notice of January 9, 1992, 1135 O.G. 13-25. at 14.

NOTE: "The concise explanation requirement for non-English language information may be met by submission of an English language version of the search report indicating the degree of relevance found by the foreign office." Notice of January 9, 1992, 1135 O.G. 13-25, at 20.

WARNING: "The requirement in section 1.98(a)(3) for a concise explanation of non-English language information would not be satisfied by a statement that a reference was cited in the prosecution of a parent application." Notice of January 9, 1992, 1135 O.G. 13-25 at 20 (emphasis added).

Reference AK is a non-English language copy of the Master's thesis of co-inventor Mohamedreza Hagh. It includes an English language abstract. According to Mr. Hagh, the Master's thesis provides background information for the subject patent application relating to turbo codes and iterative decoding schemes. Some of the thesis figures were included in the patent application.

Section 10. Identification of Person(s) Making This Information Disclosure Statement

The person making this certification is

(check each applicable item)

- (a) ☐ the inventor(s) who signs below

SIGNATURE OF INVENTOR

(type name of inventor who is signing)

- (b) ☐ an individual associated with the filing and prosecution of this application (37 C.F.R. section 1.56(c))

SIGNATURE OF INVENTOR

(type name of inventor who is signing)

- (c) ☒ the practitioner who signs below on the basis of the information:

(check each applicable item)

☐ supplied by the inventor(s).

☐ supplied by an individual associated with the filing and prosecution of this application. (37 C.F.R. section 1.56(c)).

☒ in the practitioner's file.



SIGNATURE OF PRACTITIONER

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02550/00167 322776.1